~~213-D~~

UC-NRLF

B 2 821 996

T S
1484
C38
1909
MAIN

Belfast, Ireland. Museum and Art Gallery

Publication 19

Belfast Municipal Art Gallery and Museum

CATALOGUE

OF THE

HORNER COLLECTION

OF

SPINNING WHEELS

And Accessories.

PRICE ONE PENNY.

[Sold in the Art Gallery and Museum.]

Belfast:

PRINTED BY W. & G. BAIRD, LIMITED, ROYAL AVENUE.

1909.

COUNCIL OF THE CITY AND COUNTY BOROUGH OF BELFAST.

LIBRARY AND TECHNICAL INSTRUCTION COMMITTEE.

Chairman—ALDERMAN SIR JAMES HENDERSON, M.A., D.L., J.P.
Vice-Chairman—COUNCILLOR MERCIER.

ALDERMEN:

SIR ROBERT ANDERSON, J.P.
BELL.
BYRNE.
FINLAY.

COUNCILLORS:

BROWNE, A. V., M.D.
DONNELLY.
GIBSON.
MACARTNEY, J.P.
M'MORDIE, M.A.
MORROW.
THOMSON, M.D.
TRIMBLE, M.B.
WHEELER.

CO-OPTED MEMBERS:

MR. J. CORR.
" J. G. CRAWFORD.
" B. DEVINE.
" J. F. HILL.
" J. HORNER.
MR. J. MACKIN.
" W. H. M'LAUGHLIN, J.P.
" J. STEVENSON.
" A. TAYLOR.
" A. B. WILSON, M.INST.C.E.

PROFESSOR M. F. FITZGERALD, B.A., Assoc.M.I.C.E.

CURATOR.
ARTHUR DEANE.

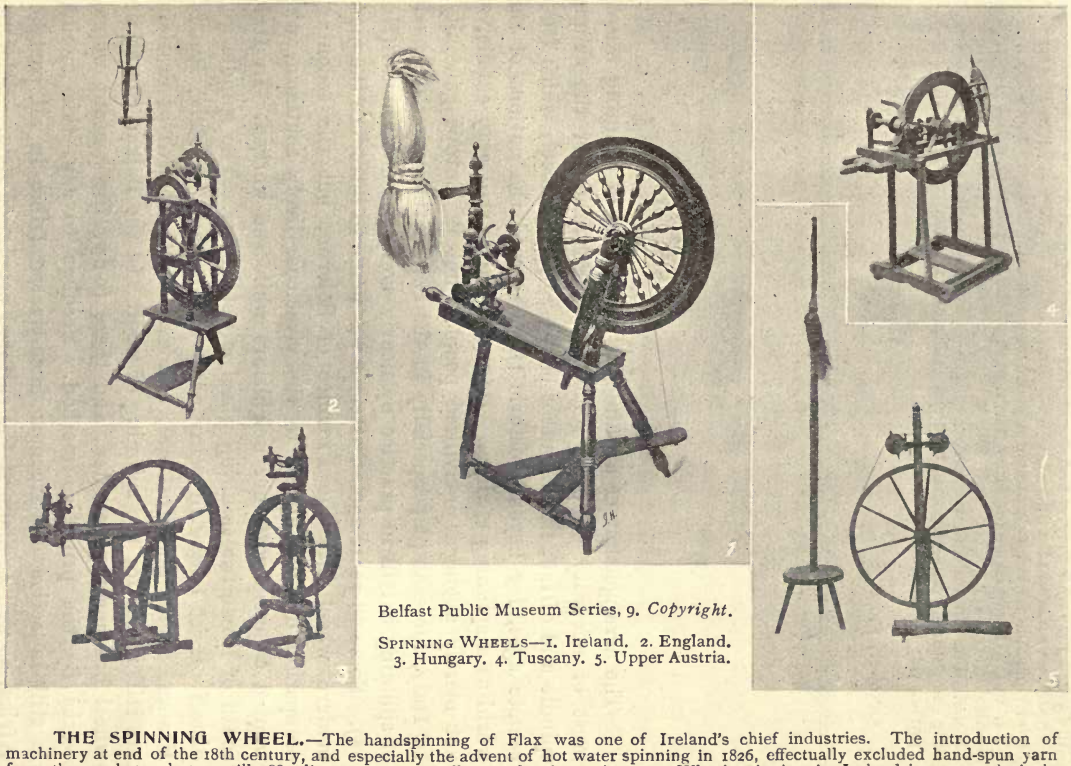
THE ART GALLERY AND MUSEUM

Will be Open Daily from 10 a.m. till 6 p.m.,
except Wednesdays, till 3 p.m.;
and on Tuesdays and Saturdays till 9 p.m.

CLOSED on Good Friday and Christmas Day, and such other days as the Committee may direct.

ADMISSION FREE.

LOAN STACK
GIFT



Belfast Public Museum Series, 9. *Copyright.*

SPINNING WHEELS—1. Ireland. 2. England. 3. Hungary. 4. Tuscany. 5. Upper Austria.

THE SPINNING WHEEL.—The handspinning of Flax was one of Ireland's chief industries. The introduction of machinery at end of the 18th century, and especially the advent of hot water spinning in 1826, effectually excluded hand-spun yarn from the markets; but up till 1883, linen yarn was still spun for domestic use. Wheel spinning in Ireland is now exclusively confined to wool.

T 51484 2 T 5 H
C 38
1909
MAIN
1

LOAN STACK

Note.

The unique collection to which this handbook refers was made by Mr. John Horner, of Belfast, and presented by him to the Museum during the years 1907 and 1908. The donor has made a special study of spinning wheels, and has kindly undertaken the preparation of the Catalogue. The frontispiece is issued as a Museum pictorial postcard. Plates II., IV., V., VI. and VII. are reproduced by permission of the proprietors of the *Queen*, while Plates III., VIII. and IX. are taken from the Museum *Quarterly Notes*. The Committee wish to express their sincere thanks to Mr. Horner for the valuable collection, and for the assistance he has rendered in preparing the Catalogue.

A. D.

October, 1909.

Foreword.

The arrangement of a Catalogue descriptive of spinning wheels must of necessity comprise some short description of the simple spindle and distaff, the precursor of the spinning wheel, which from remote ages, far beyond historic times, served the nations of the world as a spinning medium. Its use to-day is still very extensive, not merely amongst uncivilized peoples, but in Europe generally. In Italy, for example, especially in the South, this primitive mode of spinning is still in practice by nearly every peasant woman (No. 64). Some 40 years ago an attempt was made to introduce the more modern wheel into the Province of Solerno, but the sedentary occupation did not appeal to the vivacious, lively southern, who wanted a gossip with her neighbours while she worked. In Italy south of Rome the spinning wheel is not in use. The spindle and distaff persist to-day in many parts of Germany, Austria, Russia, France, Spain, and Portugal, and even in the North of Scotland are still in use for the spinning of wool. In the Balkan States the wheel has never penetrated, and there to-day the peasant woman works by the primitive method. Needless to say, this method is still in active use amongst uncultivated tribes in all parts of Africa, as well as amongst the cultured peoples of Asia. Reference will be made later on to some specimens in the Collection. The spindle in use to-day and those which were employed remote ages ago embody exactly the same principle, a principle which has been carried through the spinning wheel stage, and is to-day the twisting agency in the modern spinning frame.

The original spindle consisted of two parts, the spindle and the whorl; this latter was a piece of wood, stone, clay, or other material which gave momentum to the spindle when twirled between the fingers, or between the palm of the hand and the leg, as universally practised in Southern Italy. The distaff upon which the material to be spun was wound, was carried under the left arm, or placed in the belt or breast of the operator; the spindle was notched at the top to receive the end of the material; so long as the spindle revolved the yarn twisted, and when it ceased the yarn was wound on the spindle, the last twisted portion placed in the notch, and the operation continued. It would appear natural that the revolving motion given to the spindle by means of the operator's fingers could be arrived at by a mechanical method if the spindle were mounted in bearings and revolved by means of a band over a driving wheel. The idea occurred to someone, and thus the first spinning wheel was made. It was a simple evolution; on the spindle was fastened a small pulley, called in these countries a "whirl," derived from the "whorl" of the ancient spindle; motion was conveyed to the spindle by a band running over the wheel and the whirl, as in modern spinning to-day; in the latter this whirl is called a wharve, evidently derived from the older word. The spindle bearings were fastened in a framework of wood, which also supported the bearings in which the wheel revolved by means of the operator's hand. We here find the spindle of the ancients placed horizontally, and revolved from the motion of the wheel, instead of being twirled between the fingers. When about a yard in length was spun it was allowed to wind itself upon the spindle, and the operation was repeated in a manner similar to that employed in the older operation. It is not known definitely whence the spinning wheel originated; it is generally, and with some reason, supposed that India was its birthplace; such wheels have been known there for centuries past (No. 1).

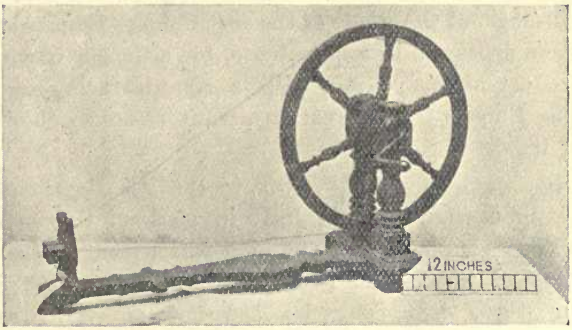
CATALOGUE.

1. *Indian Spinning Wheel* (Plate II.).—Many thousands of this class of wheel are in use in India to-day. The framework rests on the ground unsupported by legs, and the spinner kneels or sits on the ground in Oriental fashion. Cotton spinning and weaving are known to have existed in India for upwards of 3,000 years. The industry is mentioned by Herodotus. At that time, it is probable, the simple spindle and distaff were used. This wheel is, so far as we know and can judge, the parent of spinning wheels; it continues in the East to-day as all ancient modes of textile manufacture still continue, and will do so, no doubt, until mechanical spinning makes it impossible.

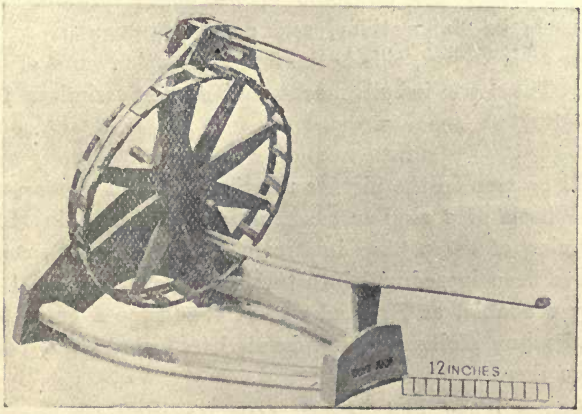
2. *Japanese Spinning Wheel.*—Similar in mechanical construction to the Indian wheel, but differing in its general structure. Its flimsy build reminds one of the unsubstantial character of the Japanese houses, but although lightly built it combines sufficient strength for its purpose. In the country parts of Japan the spinning wheel is still much in use, but the factory system of spinning is gaining greatly, and the people are adapting themselves readily to the more profitable methods of yarn spinning. Considering the progress Japan has made in such a short period of time, and is still continuing to make, it would seem likely that the spinning wheel there will soon be but a memory. A picture is exhibited showing a Japanese girl working at one of these wheels.

3. *Chinese Wheel*, with 3 spindles worked by the foot (Plate II.).—This wheel, in use in China to-day, displays one of the oddest forms of converting a reciprocating into a rotary motion. A certain amount of credit must be given to China for producing a treadle motion when India on the one side and Japan on the other never seem to have attacked the problem. John Chinaman's methods are, no doubt, peculiar, and the treadle introduced into his spinning wheel is one difficult of conception. It is a matter of regret that there is no photograph or picture available to show how this wheel is worked. Evidently one operator will be required to work the treadle with his feet, and considerable skill and practice will be necessary to keep the treadle in its place both in the wheel and on the fulcrum. From the position of this operator, so far removed from the spindles, it would hardly seem possible for him

PLATE II.



No. 1—INDIA.



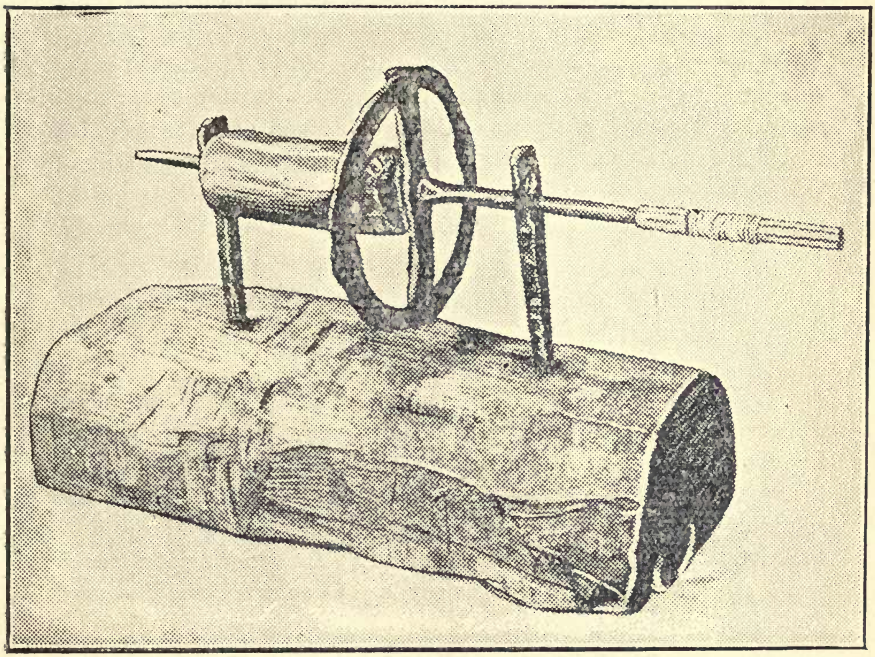
No. 3.—CHINA, showing 3-spindle Treadle Wheel.

to use his hands in the actual spinning, and as there are three spindles it will require two people to feed them. It would seem that a fourth spindle might be conveniently introduced without involving any extra labour.

4. *Chinese Wheel*, worked by hand, constructed mechanically like the Indian and the Japanese specimens.—The wheel, however, is built up in a peculiar fashion, the face being formed of interlaced cordage. Throughout the whole of the vast Chinese Empire spinning wheels of these types are in constant use, for although importations of cloth are extensive, yet the village manufacturing conditions remain. The Empire is too great to permit of an economical distribution of imported goods.

5. *Welsh Spinning Wheel.*—Next to the Asiatic wheels, and very similar in construction—in fact, in mechanical construction exactly the same—is placed this spinning wheel from Wales. It is the same type of wheel used in Ireland and Scotland. Similar wheels from these two countries are not on view, as they would be mere repetitions. This wheel, then, may be considered the "long wheel" of Ireland, the "muckle wheel" of Scotland, and the "great wheel" of Wales. The fact of this wheel being, like the Asiatic wheel, devoid of flyer, makes it unique in Europe. Except in the Faroe Islands, where it was introduced from the Scotch Highlands, it does not appear to exist anywhere else in Europe. It is, although much larger, the Asiatic wheel set upon legs. The first spinning wheels we have any knowledge of, in use in Europe, were wheels of this kind, but somewhat smaller. A 14th century manuscript in the British Museum has on some of its pages spinning wheels designed merely as elaborations, and quite unconnected with the text. So far as is known, this is the first authentic record of wheels in Europe. They are in all mechanical respects similar to the Indian wheels, but are supported on legs to suit the spinner, who, unlike the Oriental woman, prefers to stand at her work, as will be seen in the picture showing a Welsh woman at the "wheel." Wheels of a similar construction were used in Holland for the spinning of hemp fibre in the middle of the 18th century, and may have been introduced into these islands from there. This is extremely probable, as Holland was at that time a great textile country, and many Hollanders immigrated to Ireland and pursued their callings there.

6. *Spinning Wheel and Spindle from Teneriffe*, the largest of the Canary Islands (Plate III.).—This wheel is unique, as no other form approaches its construction. It consists of an untrimmed



No. 6.—Spinning Wheel from Teneriffe.

block of wood measuring 16½ inches in length, which serves as a base, while the spindle, which is set in a couple of iron uprights, is revolved by rubbing with the palm of the hand the wooden pulley to the left of the fly-wheel, while the flax is fed by the other hand to the spindle. This novel method was no doubt the outcome of the brain of some islander, who either conceived the idea of running a spindle in bearings, or, having heard of spinning wheels, concocted this apparatus to serve for one. Its interest lies in the fact that during the evolution of the spinning wheel from the simple spindle of the ancients it never served as a connecting link.

7. *Spindle, Distaff, and Reeling Stick from the Congo.*—These specimens very clearly depict the old-world method: the spindle is the usual notched stick; the whorl, in this instance, is made, conveniently, of a piece of Cassava or Manioc root, from which the tapioca is made. The reeling stick is not unlike some still in use in European countries.

8. *Handloom, Northern Nigeria, Africa.*

9. *Spindle and Whorl* for spinning hemp into cord. Used by the Bheels, Panch Mahals, India. Given by Mr. G. W. Blair.

10. *Spindle and Whorl, Egypt.*

11. *Spindle and Whorl, Hebron, Jerusalem.*

12. *Irish Castle Wheel.*—Called so probably from its shape. This type of wheel is peculiar to Ireland, no other country possessing one quite like it. Its use is confined principally to the North, to Antrim and Donegal, and is still used in these counties for the spinning of wool, flax spinning by wheels having long since ceased to exist. The position of the wheel inside the stout tripod framework gives the whole arrangement an amount of rigidity very desirable.

13. *The Low Irish Wheel* (Plate I., No. 1).—This is the wheel most sought by collectors, usually called the old Irish spinning wheel. Its shape is somewhat more graceful, and it certainly was the wheel mostly in vogue in Ireland during the palmy days of hand flax spinning. In records of 100 years ago or more this wheel is always called, and with truth, the "Dutch wheel." It was introduced into Ireland from Holland by the Earl of Strafford. Nos. 26 and 27 from Holland show the type. Definite records are extant of the introduction of this wheel into Ireland, with information accurate enough to stamp it as being distinctly Dutch. Irish spinning wheels are prized, as Ireland was the foremost of the three kingdoms in the great hand flax spinning industry, and to-day Ireland takes the lead in modern mechanical flax spinning of the world.—(Belfast N.H.P.S. Coll.)

14. *Irish Reel.*—Two definite sizes of reel only were allowed by statute in Ireland, commonly called the long and the short reel. This uniformity is strikingly emphasized if one compares the various reels and reeling sticks from other European countries, no two of which are alike in this respect, and the variations of which must have led to endless confusion. A clockwork arrangement consisting of a wooden worm and wheels moved a clapper when a "cut," or 300 yards, was reeled off.

These Irish spinning wheels, as well as all the others catalogued after them, are made, so far as the actual spinning parts are concerned, on an entirely new basis. On the wheels already described from Asia and Wales two operations were performed at different times, one of twisting and one of winding the twisted yarn on the spindle; if these two could be done conjointly the capacity of the wheel would be more than doubled. To Johann Jürgen, a wood-carver in Wattenbüttel, in Brunswick, is attributed generally the important invention of the flyer and bobbin. He attached a flyer to the spindle which gave the twist to the yarn, which was immediately and automatically wound upon the bobbin running loose on the spindle. This was in the year 1530, and to-day the same principle exists in modern flax spinning machinery. This invention was a great forward stride; it not only enabled the spinster to produce more than double the quantity of yarn in a given time, but enabled her also to devote her whole time and thought to the spinning process, the winding being self-regulating. Every credit must be given to Johann Jürgen for conceiving and bringing into practical use a novel idea of such moment, and one is inclined to believe that, so far as he was concerned, the invention was original. The idea had, however, been thought out and designed some years before by Leonardo da Vinci. The fact that Jürgen's invention is fixed in 1530 and Leonardo died in 1519 gives proof of the priority, but the invention of Leonardo seems never to have been brought into practical use. Long years after his death the design was found accurately worked out amongst his sketches.

15. *Sets of Irish Hand Hackles.*

16. *Cloves* (2) formerly used in Ireland for breaking flax straw previous to the process of scutching.

17. *Irish Handloom Shuttles.*—One of these was in use before the fly shuttle was invented. The weaver threw the shuttle with his hand. Two other shuttles of this latter time are shown, one from Bavaria, the other from the Canary Islands.

18. *Implements of Stone and Bone* used for rubbing the web when in the loom, *Ireland.*

19. *Spinning Wheel from the Scotch Highlands.*—This wheel, although smaller, is in all respects like the low Irish wheel, No. 13, and no doubt originated from the same source, namely, Holland, probably not direct, but through Ireland; the frequent intercourse of the people of Scotland and Ireland would lead to this conclusion, especially as Scotland took advantage by example of the regeneration of the Irish linen industry by King William III. under Louis Crommelin, and worked out the Scotch industry upon similar lines.

20. *Spinning Wheel, England* (Plate I., No. 2).—It is somewhat difficult to find an example of an old English spinning wheel for flax. England in the days of wheel spinning produced mostly woollen yarns and very little flax; the latter industry was given by her as a present to Ireland. This wheel differs materially in shape from those of the sister countries, and follows the German model. These wheels of the United Kingdom, with the exception of the Welsh wheel, are moved by the foot operating a treadle; this enabled the spinstress to use both her hands for feeding the flax.

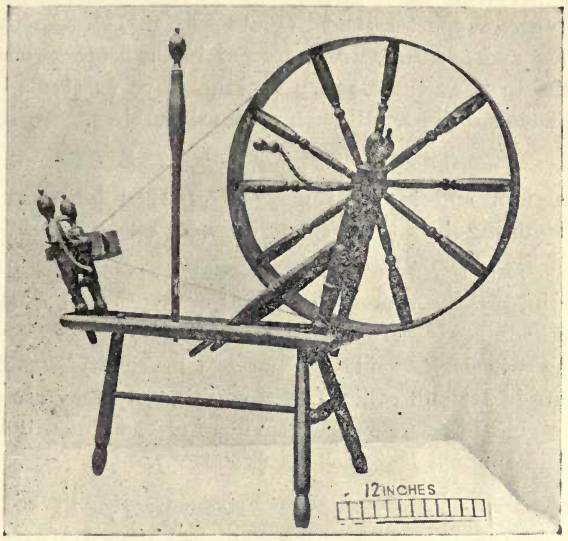
21. *Spinning Wheel from France.*—Here we find there is no treadle arrangement, the whole being turned by hand. When Louis Crommelin came to Ireland he attempted to introduce this type of wheel, on the ground that by it a more evenly twisted yarn was produced; for if an entanglement of the flax occurred both hands were necessary to release it, thus the wheel of necessity stopped, while if a treadle motion were used the foot might still ply the treadle and overtwist the yarn. The Irish women refused to use this Picardy wheel. The example shown was in use within 30 miles of Crommelin's birthplace in Picardy 160 years ago, and corresponds to Crommelin's written description of the wheel he desired to introduce (Plate IV.).

22. *Spinning Wheel from the same district as* 21, but of later construction, showing the introduction of a treadle.

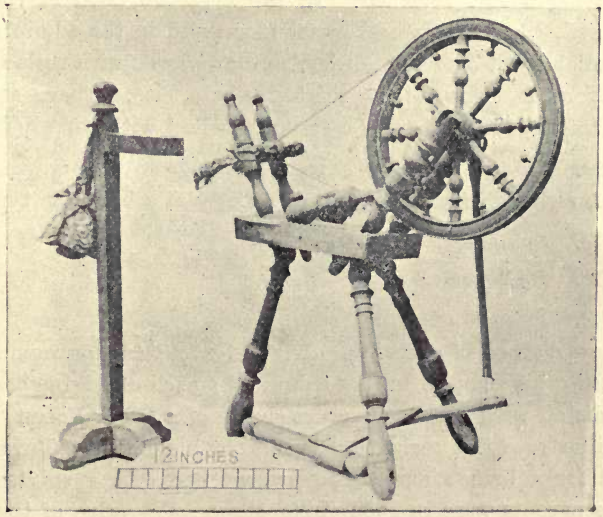
23. *A more modern wheel than* 22, wholly of the Dutch type, and in use to-day amongst the peasant women in Normandy and Brittany purely for domestic purposes.

24. *French Wheel from the Cambrai district*, extensively used at the present time for producing yarns commercially of a greater degree of fineness than can possibly be produced in spinning mills. For lace purposes, fine cambric handkerchiefs, and body linen this class of wheel is used, the women working in cellars, where the

PLATE IV.



No. 21.—PICARDY, FRANCE.



Nos. 24, 25.—CAMBRAI, FRANCE.

stillness and humidity of the air conduce to help the production of the exceedingly fine yarn. It will be noticed that the "uprights" in the two Picardy wheels are nearly vertical, and a strut or stay is used to give support to them (Plate IV., p. 14). In the other two types (23 and 24) these are placed as in the Dutch wheel, at angles sufficient to bear the strain; yet the stays or struts of the older wheels have survived, although obviously useless.

25. *Distaff Stand and Brush, Cambrai* (Plate IV., p. 11).

Belgium and Holland may be grouped together, for in the wheel spinning days these countries were one.

26. *Very Old Dutch Wheel.*—In 1724 a certain Richard Hall of Dublin, made a tour in the Low Countries, and wrote a book on the methods used there in the linen manufacture. Regarding the spinning wheels he said: "They are much after the same form with ours in Ireland called Dutch wheels, only they are made firmer and the rims heavier." The heaviness of the rim will be distinctly noticed in this old Dutch wheel (Plate V.).

27. *A Modern Wheel from Friesland.*—It will be noticed that in the succeeding examples many of the wheels are of this Dutch type. Holland was the foremost country in Europe in the production of linen goods, and her spinning wheels were widely copied (Plate V.).

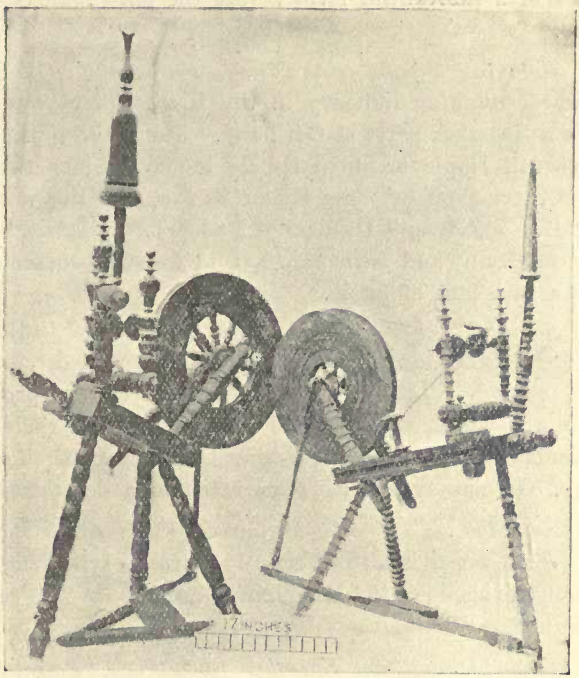
28. *German Wheel from the Rhineland.*—This is interesting in having a reel attached. In the neighbourhood of the town of Kempen, where this wheel comes from, and in the adjoining villages in Holland just over the border, similar wheels with reels are found; so far as is known they exist nowhere else. There seems little practical use in cumbering a spinning wheel with a reel (Plate V.).

29. *Spinning Wheel from Deessenhofen, Swabia.*—This little wheel, although from Bavaria, is strictly of a Tyrolese type.

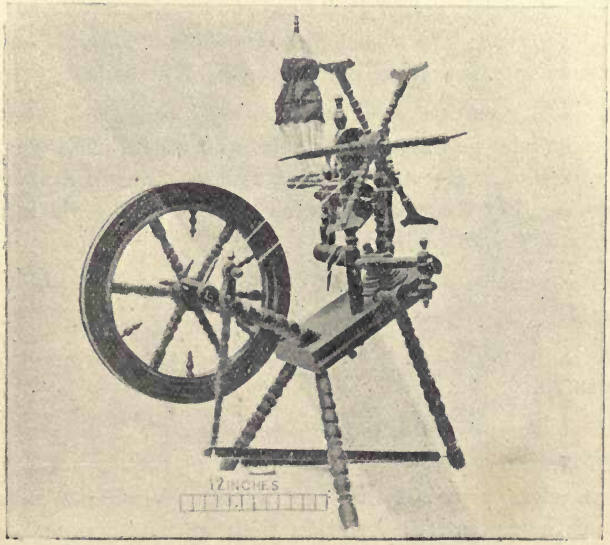
30. *Spinning Wheel from Blenheim, Swabia* (Plate VI., p. 15).

31. *Reel from the same village.*

32. *Distaffs* (2), *also from Blenheim*, one of them disjointed to show method of carrying. It was the custom for women to meet in each others houses for a "spinning"; each one brought her wheel and distaff with her. A picture shown of a Black Forest "spinning" will illustrate this social and profitable custom. In Bavaria it was usual for a bride's parents to present her with a spinning outfit; if the parents were in good circumstances the value of the gifts was enhanced by being elaborately carved. The foregoing three items



NOS. 26, 27.—HOLLAND.



NO. 28.—RHINELAND, GERMANY.

comprised such a bridal present to the grandmother of the present proprietor of a substantial farm beside the once famous village of Blenheim.

33. *Spinning Wheel with Distaff, Furtwangen, Black Forest* —The wheel spinning industry in the Black Forest was never so extensive as in other parts of Germany. The making of clocks and toys gave full employment to female labour. Since their manufacture is carried on by male labour in factories the women have little to do. The Grand Duchess of Baden lately interested herself in their condition, and is making a bold effort to introduce wheel spinning as a means of profit.

34. *Spinning Wheel, Algäuer Alps, Bavaria.*—In the Mountainous districts of Germany wheel spinning is still carried on as a domestic industry. Little or no employment can be procured for women in the winter months, and thus they spend their time, as their grandmothers did, in furnishing the house with linen. This wheel is of German type, with some attempt at decoration.

35. *Spinning Wheel and Measuring Stick from Bautzen*, in Saxony.—This wheel is also of strictly German type, and is found throughout the whole of the Kingdom of Saxony, as well as throughout all Prussian Silesia.

36. *Stand Distaff and Spindle, Buchelsdorf, Posen, Germany.* —Still in use, and is an interesting survival. In Germany, with her modern practice in all industrial branches, this thousands of years' old method still persists.

37. *Spinning Wheel and Separate Jointed Distaff*, carved and metal ornamentation, from Bohringen, in Wurtemberg (Plate VI.).

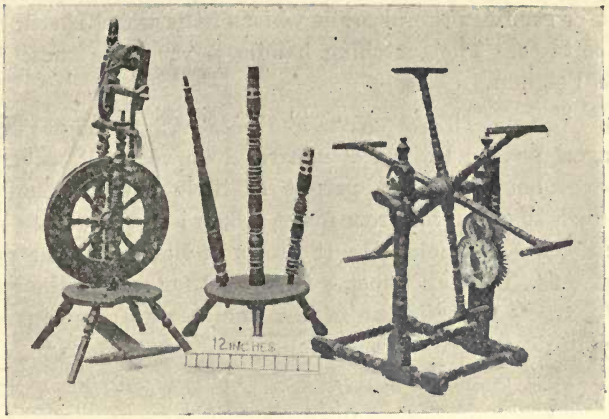
38. *Reel from the same place as* 37; were procured from a wheelwright who had several for sale, and others undergoing repair in his workshop. He still makes a few new wheels every year for use, showing that there is still some activity in the old industry in Wurtemberg (Plate VI.).

39. *Spinning Wheel of the Dutch type, from Liebanau*, in the Spreewald.

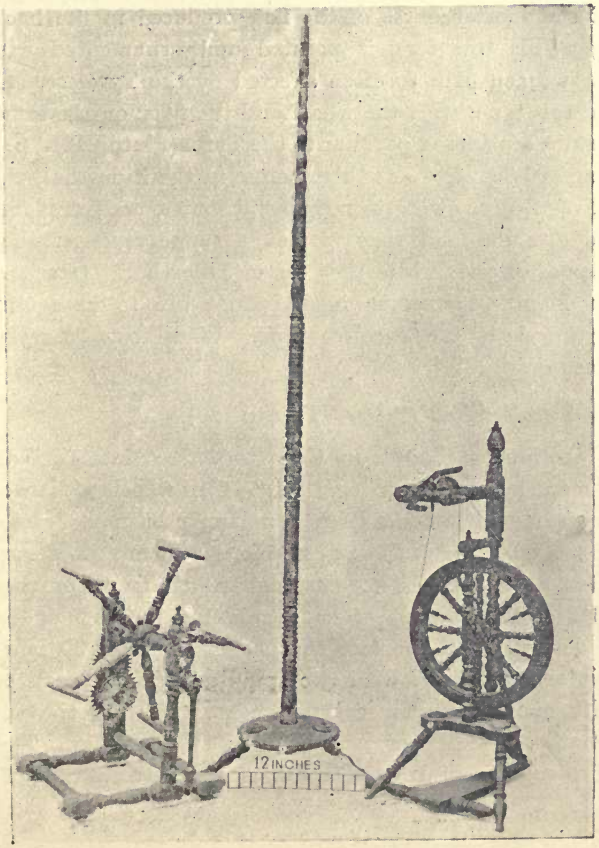
40. *Spinning Wheel of the German type*, from the same village as 39.

41. *Reel, dated 1825, and Hackle, Spreewald.*

42. *Scutching Handle, also from the Spreewald.*—Although living in close proximity to Berlin, the Slavonic Wends of the Forest of the Spree still maintain their ancient manners, customs,



No. 30.—BLENHEIM, BAVARIA.



No. 37, 38.—WURTEMBERG, GERMANY.

and peculiar dress. It may be supposed, therefore, that the custom of home spinning still maintains to a considerable extent, and in the winter evenings the pleasant whirr of the wheel is still heard in many cottages. The scutching handle is very like those formerly used in Belgium.

43. *Spinning Wheel, Kaltern Tyrol.*—All through Tyrol the spinning of flax on the wheel is carried on very extensively. The hard, snow-bound winters permit of little outdoor employment, except such as is derived from forest labour; so the women spin and the men weave as of old. In the town of Botzen, in the middle of Tyrol, the flax in small bunches is exposed for sale in the shops and in the markets, for the use of the women who come in from the country to do their day's shopping.

44. *Tow Spinning Wheel, from Aschan, Tyrol.*—This wheel is used for tow spinning, as the distaff, or, as it is called, tow fork, shows. The tow is thrown on this fork, and is drawn out in a similar way to the longer flax fibre. Tow, it may be stated, is composed of the shorter fibres of the flax produced in the hackling or combing. This tow fork is painted and ornamented with little imitation wooden bells so often affected by the Tyrolese. Spinning wheels of this type, with the wheel and the flyer on the same plane, are generally considered peculiar to the Tyrol (Plate VIII., p. 20). In 1837 some 400 Tyrolese left their homes in the Zillerthal, the valley of the River Ziller, owing to religious disputes, and wandered many hundreds of miles, till they formed a home amongst the giants' mountains of Silesia, which they called Zillerthal. Here, and even over the giants' mountains in Bohemia, are to be found many spinning wheels of the Tyrolese type. Wheel No. 29 is evidently of Tyrolese origin.

45. *Tyrolese Reel* (Plate VIII., p. 20).

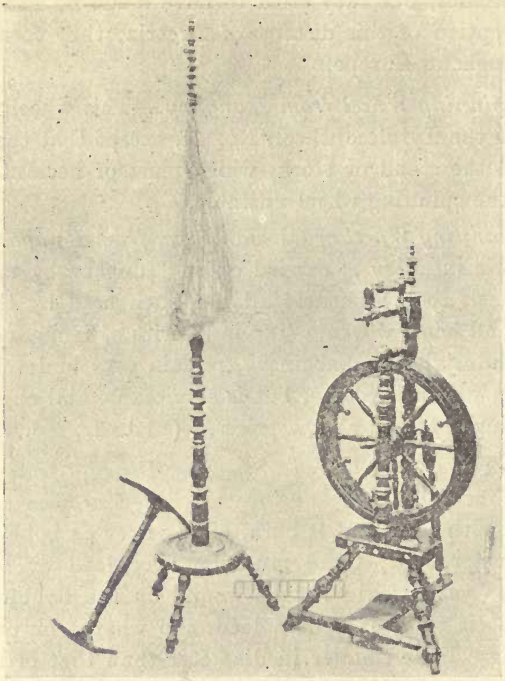
46. *Spinning Wheel with Two Spindles* (Plate I., No. 5), inscribed "made by Josef Auinger, 1904."—This wheel, with its separate distaff, comes from Prambachkirchen, in Upper Austria. Josef Auinger is a maker of spinning wheels and simple agricultural implements. In the winter he makes the former, and in the summer the latter. Some idea of the amount of hand spinning in his neighbourhood may be derived from the fact that he makes over 30 new wheels every winter, two-thirds with two spindles for finer yarn and one-third with one spindle for coarser yarns. Most of the wheels in use in that part of Upper Austria have two spindles. The Linen Board Proceedings of Ireland speak of the introduction of wheels

with two spindles, but they seem to have made no headway; with the sole exception of this district of Austria, they seem to be unknown throughout Europe.

47. *Spinning Wheel from Hungary.*—This wheel in principle is not unlike the Tyrolese wheel, No. 44, except that the wheel projects beyond the stand or stock, which must of necessity be open; this makes the spinning wheel unstable.

48. *Spinning Wheel of German type, from Hungary.*—A very large domestic industry is carried on in Hungary by means of the spinning wheels to-day; nearly all the linen used by the people is home spun and home woven. The industries of Hungary, especially the textile industries by machinery, remain very undeveloped. The class of linen woven is coarse, but is serviceable and cheap, the raw material being obtained at low prices.—(Plate I., No. 3, p. 1).

49. *Spinning Wheel and Separate Distaff, from Parschnitz, Bohemia.*—This wheel presents a feature differing from most others. In spinning with flyer and bobbin, either flyer or bobbin must run somewhat faster, viz., there must be flyer lead or bobbin lead, otherwise the yarn would not be wound on the bobbin. In most spinning wheels there is bobbin lead, the wharve or pulley of the bobbin being a little smaller in diameter than that of the flyer, or rather of the spindle, of which the flyer forms a rigid part. In such instances a single band is passed twice round the wheel and once round each wharve; the bobbin, therefore, always leads, and takes up the spun yarn. The other system of flyer lead employs only one band, driving the spindle and flyer; the bobbin is loose on the spindle, and revolves by the pull of the spun yarn. To check the speed of the bobbin a brake or drag is applied, and this drag is increased as the bobbin fills, getting larger in diameter, with an inclination to increased velocity. This latter method is, without doubt, the more correct, and is applied to only three wheels in the Collection, namely, to Nos. 21 and 22 from Picardy (both old wheels), and to this (No. 49) Bohemian wheel. The same system is in use in modern flax spinning, and there can be little doubt that in the case of the wheel No. 49 the principle has been copied from the modern spinning frame. The wheel is of recent make, and was constructed in a district surrounded by numerous spinning mills. Quite a different system from either of these will be found on wheels Nos. 33, 34, 37, 40, 43, 45, 50, 57, 60, 61, 62; here only one band is employed driving the bobbin, hence there is bobbin lead; the flyer and spindle run loose, and are revolved by the pull of the yarn; here the brake or drag is applied to the spindle and



No. 50.—BOHEMIA.

No. 71.—RUSSIA.

flyer, and this drag must be decreased as the bobbin fills. This system is in every way the reverse of that employed in Nos. 21, 22, and 49.

50. *Spinning Wheel, Measuring Stick, and Distaff, Borowitz, Bohemia* (Plate VII.).—Although in the midst of machine spinning, the older method still survives, but in a diminishing quantity, there being plenty of employment for female labour.

51. *Tow Combs* (3) *and Hackles* (2) from the same village as No. 50.

53. *Bohemian Yarn*, wheel spun.

54. *Flax* used by wheel spinners in Bohemia in the form of specimen shown.

55. *Bleached Linen* made from Bohemian Flax.—These latter three items were but a year ago (1908) in course of manufacture, showing how hard old customs die, even when side by side with severe competition.

56. *Spinning Wheel, Reel, and Jointed Distaff, Oberburg, Emmenthal, Canton Berne, Switzerland.*—This wheel is purely Swiss in type, and was used throughout the Cantons of Berne, Valais, Ticine, Lucerne, Unterwalden, and Grisens. From the latter Canton it found its way into Tyrol, and is used to-day by the peasants in the Oetzthal in that Crown-land. It appears to be one of the best designed, and although light in appearance, one of the most substantial in the Collection. It is mechanically well proportioned, and is a very true running wheel. Unlike the neighbouring Tyrol, Switzerland has practically ceased its wheel spinning industry, indeed the industry wes never at any time of importance except in the North, the arts of woodcarving, watchmaking, etc., giving other employment to the people, and flax growing has almost entirely ceased; only in the Northern Cantons there is still carried on a remnant of what was once an industry of some moment. In St. Gall, Thurgau, and Appenzell the spinning wheel is occasionally found at work; in these Cantons the wheels are all of the German type.

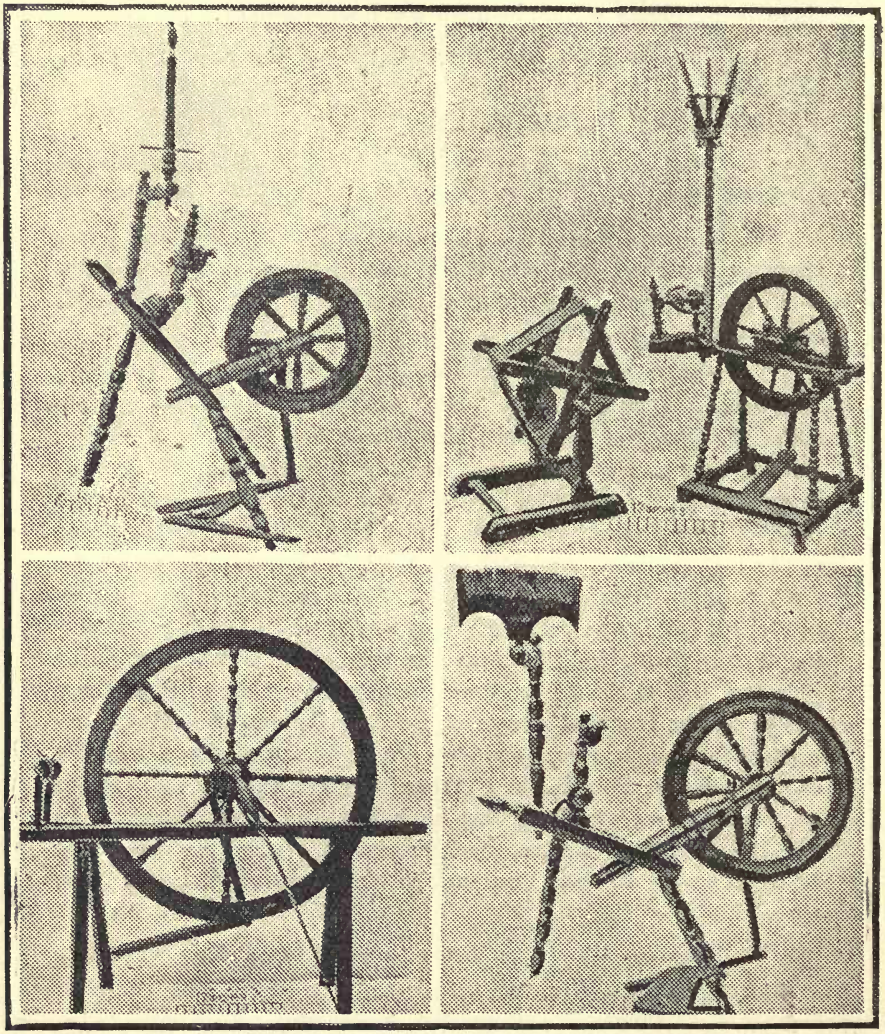
57. *Spinning Wheel from Teufen*, in the Canton of Appenzell.

58. *Tow Combs from the same village as* No. 57.

59. *Scutching Stock and Handle from Arbon, in the Canton of Thurgau* (Plate IX., p. 22).—The concave block of wood attached in this scutching stock is used to lay the flax straw upon; it is then beaten with the scutching handle to break and loosen the straw.

No. 83.—POLAND

Nos. 44 and 45.—TYROL.



No. 66.—PORTUGAL.

No. 68.—RUSSIA.

In Ireland the iron cloves (No. 16) were used for this purpose, and sometimes the flax straw was broken over a stone by means of a wooden mallet. The flax is then scutched over the scutching block in a similar manner to that depicted in Plate IV. of a series of stipple engravings by Wm. Hincks, to illustrate the Irish Linen Manufacture.

60. *Spinning Wheel, Distaff and Reel, Tuscan Apennines.*—(Plate I., No. 4).—As stated in the introductory remarks, Italy, except north of Rome, was never a wheel spinning country; but in the Northern districts, especially in Lombardy and Piedmont and in the mountain regions of Tuscany, wheel spinning is still carried on extensively side by side with the more ancient distaff and spindle industry. None of the Italian wheels are of Italian design; they are simply copies, and very crude copies, indeed, of the Tyrolese wheels, except where a rough idea of the German type is attempted. This wheel shows a distinct Tyrolese type, but has no distaff attached to the wheel or on separate stand. The distaff used is exactly the same as that employed by the North Italian distaff and spindle spinner (see 63), and is placed in the belt or under the arm of the operator, as in the older method. The reel in this Tuscan set is very crude and clumsy, and is devoid of any clockwork arrangement for measurement.

61. *A Poor Attempt at Making a German Type of Wheel;* also from the Tuscan Apennines.

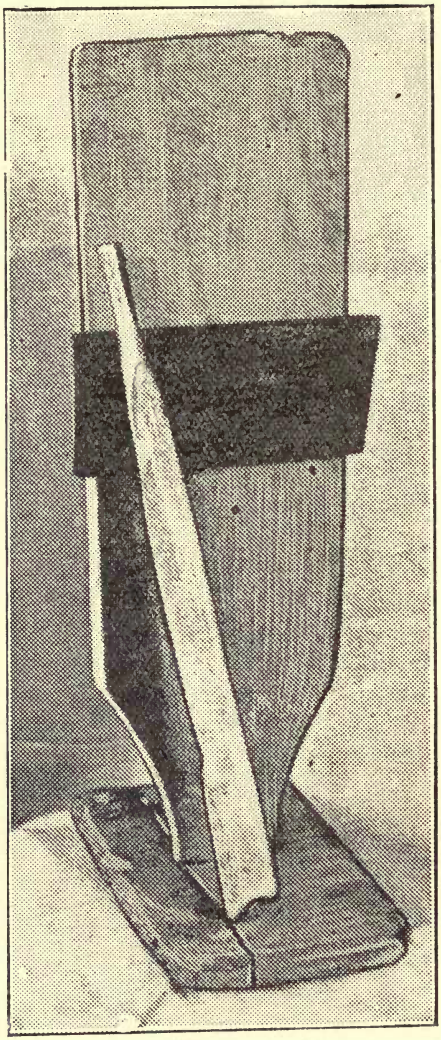
62. *Spinning Wheel, Separate Distaff, and Reel, from Bruntina, Lombardy.*—The wheel here again follows the Tyrolese type. The distaff is used as with the Tuscan wheel, and the reel has no measuring arrangement.

63. *Distaff and Spindle, Lombardy.*—The spindle here is twisted between the index finger and thumb of the right hand to give it rotation.

64. *Spindle, Distaff, and Reeling Stick, South Italy.*—The spindle in Southern Italy is always rotated by rubbing it briskly between the palm of the right hand and the thigh. The distaff is made from a piece of natural branched wood. The reeling stick is very similar to the one (No. 7) used in the Congo (see photographs of women spinning with this kind of distaff and spindle).

65. *Hackles, Rota-fuori, Imagna Valley, Lombardy.*

66. *Spinning Wheel, with Separate Distaff, Portugal* (Plate VIII., p. 20).—Spain and Portugal were never textile manufacturing countries. Nearly all the linen used in the wheel spinning days



No. 59.—SWISS SCUTCHING STOCK.

was imported from Germany and Holland, more recently from Ireland. It is a question if there was any particular type of spinning wheel in these countries. A picture by Velasquez in the Madrid Art Gallery shows a wheel distinctly of the Picardy type (No. 21) in this Collection. The specimen, No. 66, is an exceedingly old wheel with a distaff used as in Italy.

67. *Picture Showing Ancient Distaff Spinning as still in use* (1908) *by Portuguese Women.*

68. *Spinning Wheel and Reel, also Measuring Stick, from Velikoe Selo, Jaraslaff Government, Russia* (Plate VIII., p. 20).—This wheel is of Dutch type, Russia having no particular type of her own. Russian wheels, however, are usually peculiar in one respect, the distaff is a wooden comb, and is used as such after the flax has been combed or hackled over it. Two wooden hackles or combs are used for the purpose of hackling.

69. *Hackle or Comb Placed on a Bench.*—The flax is laid upon it, and with the smaller comb (at present in the wheel serving as a distaff) the flax is hackled, and when completed is transferred along with the smaller comb to the wheel. The idea is by no means bad, as the teeth of the comb separate the fibres and enable the spinner to serve them to the wheel with a minimum of entanglement.

The reel in this set is of very large dimensions, and has a peculiar mechanical motion for ascertaining the length of yarn reeled off.

The measuring stick from the same district shows crude workmanship.

70. *Hand Spindle still used in Russia, Jaraslaff Government.*

71. *Spinning Wheel and Wooden Combs, Melenki, Vladmir Government* (Plate VII., p. 18).—The spinning wheel here is of German type. The flax is combed as in the manner described under No. 69, and the comb affixed to the bench is used as the distaff, the wheel being brought close to it.

72. *Spinning Wheel from the Caucasus.*

73. *Distaff for Hemp and Flax and Four Spindles, Russia.*—This style of distaff is peculiar to Russia. The right-angled board at the bottom is weighted or steadied by the foot of the operator, who works standing. On one side of the distaff Russian hemp is bound, on the other side flax; either material is spun by twisting the spindle between the fingers. In the interior of Russia this mode of spinning coarse yarns is still greatly in vogue. Spinning

of flax yarns by wheels is an enormous idustry in Russia to-day, and not merely for domestic use. Very large quantities of linen goods are still produced by wheels and handlooms commercially, and even exported to other countries; flax being one of the staple crops, is easily and cheaply procured. In the long winter months, when Russia is white with snow, labour, except indoors, is out of the question. Eighty per cent. of the inhabitants of Russia farm the land; other industries than that of agriculture are few in comparison to the size and population of the country. As the winter months must be spent in idleness or cottage labour, many markets in various articles are supplied by Russian cottage work, and the spinning and weaving of flax is not the least amongst the manifold home industries. Nos. 74 to 81 will give some fair idea of the materials spun and woven in the homes of the people, although the range is by no means complete.

74. *Coarse Matting*, hand spun and woven from Russian flax.

75. *Towelling*, hand spun and woven from flax.

76. *Sacking Cloth*, from flax.

77. *Stair Covering*, with diaper pattern, from flax.

78. *Cloth*, from flax

79. *Mat*, made from coarse Russian flax yarn, and dyed.

80. *Plain Linen*, very soft, hand spun and woven from flax.—This material is used as the basis for embroidery, a very considerable Russian industry.

81. *Plain Linen* for household purposes.—All these samples are home manufactured.

82. *Russian Flax Brush*, for brushing flax after hackling.

83. *Spinning Wheel, Cardoff, Poland* (Plate VIII., p. 20).—This wheel is of the Dutch type, and with the ordinary distaff.

84. *Spinning Wheel and Reel*, as used in the Communes of Koskis and Lampis, in the middle of Finland.—This wheel is mounted with a tow fork, same as No. 44 from Tyrol. The ordinary distaff used when long flax is worked is beside the wheel. This wheel and its accompanying reel exhibit skill in wood-turning, and might lead one to suppose that they were specially made for the Collection. They are, in fact, but samples of the ordinary work turned out for use in Finland, and are examples of the well-known dexterity of the Finnish wood-workers.

85. *Spinning Wheel, Vassvangen, Norway.*—In Scandinavia the spinning and weaving of linen was at no time an industry worth mentioning, and flax was hardly ever grown. Wool was the principal staple used, and linen goods were imported from Holland. The specimen of Norway wheel was, however, used for spinning linen yarn, as is evidenced by the distaff attached to it. In spinning wool the fibre is combed into "slivers," and spun from the lap of the operator, no distaff being used.

In Denmark the wheels employed were of the Dutch type.

On the Screen is shown a Series of Twelve Stipple Engravings by William Hincks, 1791, representing the various processes used in the linen manufacture in Ireland, from the sowing of the flax to the packing of the finished article for exportation. The series consists of:—

A.—View near Scarva, representing ploughing, sowing the flax seed, and harrowing.

B.—View near Hillsborough, representing pulling the flax, stooking or putting it up to dry, rippling and bogging, or burying it in water.

C.—View in Co. Louth, taking the flax out of the bog, spreading it to dry, storing, beetling, and breaking it.

D.—Method of beetling, scutching, and hackling the flax.

E.—A scutch mill, with the method of breaking the flax with grooved rollers.

F.—Spinning, reeling with the clock reel, and boiling the yarn.

G.—Winding, warping with a new imported warping mill, and weaving.

H.—Brown Linen Market, Banbridge, Co. Down; the weavers holding up their pieces of linen to view, the bleachers elevated on forms examining its quality.

J.—View of all the machinery of a bleach mill.

K.—View of a bleach green, Co. Down, showing the methods of wet and dry bleaching, and the outside view of a bleach mill.

L.—View of a lapping room, with the measuring, crisping, or folding of the cloth in lengths.

M.—View of the Linen Hall, Dublin, with the boxes and bales ready for exportation.

Gaylord
PAMPHLET BINDER
Syracuse, N. Y.
Stockton, Calif.

U.C. BERKELEY LIBRARIES

C039401036